to conſtruct aqueducts, particularly where there is no great difficulties to encounter; which aqueducts may be formed of iron, *as in Plate* XIII. averaging the ſituations, much cheaper than of ſtone.

But the deciſion on the erecting of an aqueduct, or its particular conſtruction, muſt depend on a variety of circumſtances; ſuch as, the ſupply of water, ſaving of time, carriage of ſtone, or iron, &c. &c. adopting that mode which will on inveſtigation produce the greateſt ſaving, yet anſwer the intended purpoſe.

CHAP.

CHAP. XIV.

ON PERPENDICULAR LIFTS TO PASS BOATS.

ALTHOUGH I have already explained the mode of paſſing the boats, which, I conceive, will be productive of ſyſtematic navigation, and ought to be univerſally adopted till a better is diſcovered; yet the four following Plates will exhibit machines for transferring the boat by perpendicular lift. Theſe machines were originally intended for ſmall canals, as lateral cuts from thoſe of greater dimenſions, in order to extend into ſuch diſtricts as could produce from fifty to four hundred tons per day; principally to convey manure and fuel, and thereby relieve the country by a medium carriage, between the large canals and cartage.

This, for a long time, was the extent of my thoughts; the idea of an univerſal ſyſtem did not ariſe, till I diſcovered the great ſaving which would be produced by ſuch lateral cuts. I then wiſhed to render the canal equal to a trade of more than four hundred tons per day, and capable of performing the work of a large canal; in which, there was nothing wanting but an improvement in the machinery to produce expedition; but this baffled every experiment for ſome months. At length the rotatory movement, and boats with wheels, occurred; and they exhibited the power of paſſing valleys. On revolving the thought, I found it would anſwer the purpoſe, by performing the moſt important trade, producing ſyſtem, and ſimplifying the machinery: it has conſequently raiſed ſmall canals (*in my opinion*) from lateral cuts, to the moſt extenſive and important communications.

CHAP.

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